FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

February 7 to February 13, 2016 (Week 6)

Overall Summary

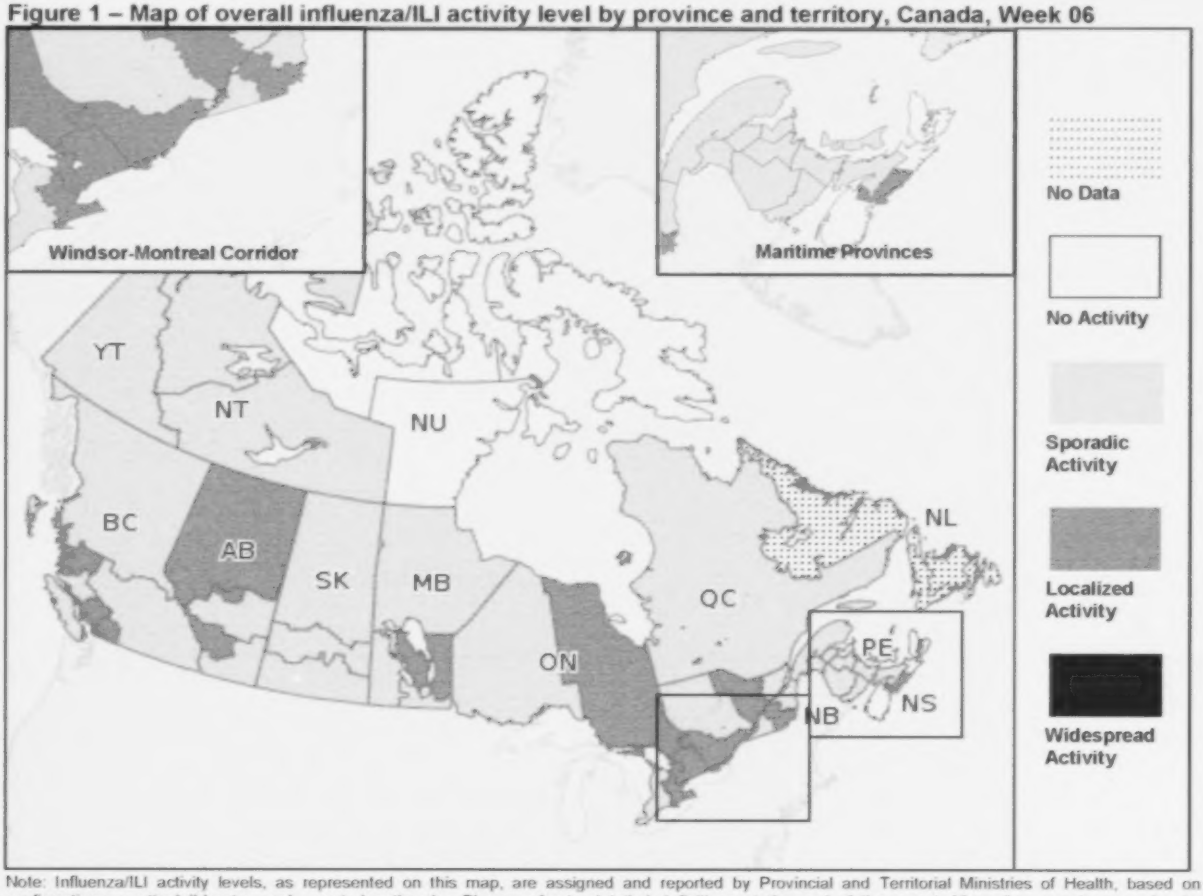
- Overall in week 06, influenza activity in Canada continues to increase.
- An increase in laboratory detections and outbreaks of influenza were reported in week 06 with the majority due to influenza A.
- Young/middle age adults are accounting for an increasing proportion of hospitalizations as reported by participating provinces and territories.
- Pediatric hospitalizations reported by the IMPACT network have increased substantially over the past few weeks, reaching 76 hospitalizations in week 06.
- Influenza A(H1N1) is the most common influenza subtype circulating in Canada.
- With the late start to the influenza season, it is anticipated that influenza activity will continue to increase over the coming weeks.
- For more information on the flu, see our Flu(influenza) web page.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2015-16 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 06, influenza/ILI activity continued to increase in Canada. A total of 30 regions across Canada reported sporadic influenza/ILI activity. Localized activity was reported in 14 regions in Canada.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 06

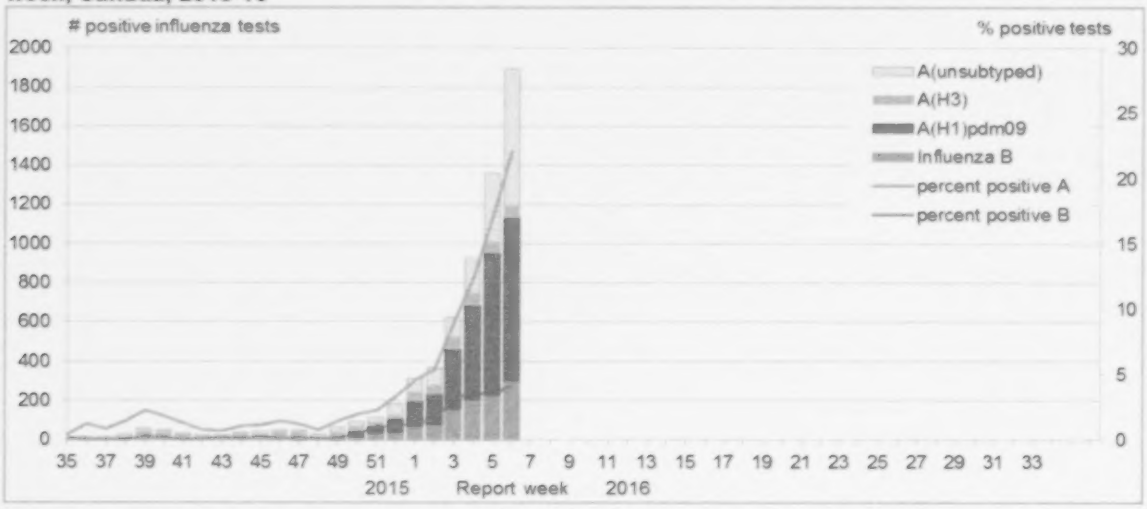


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

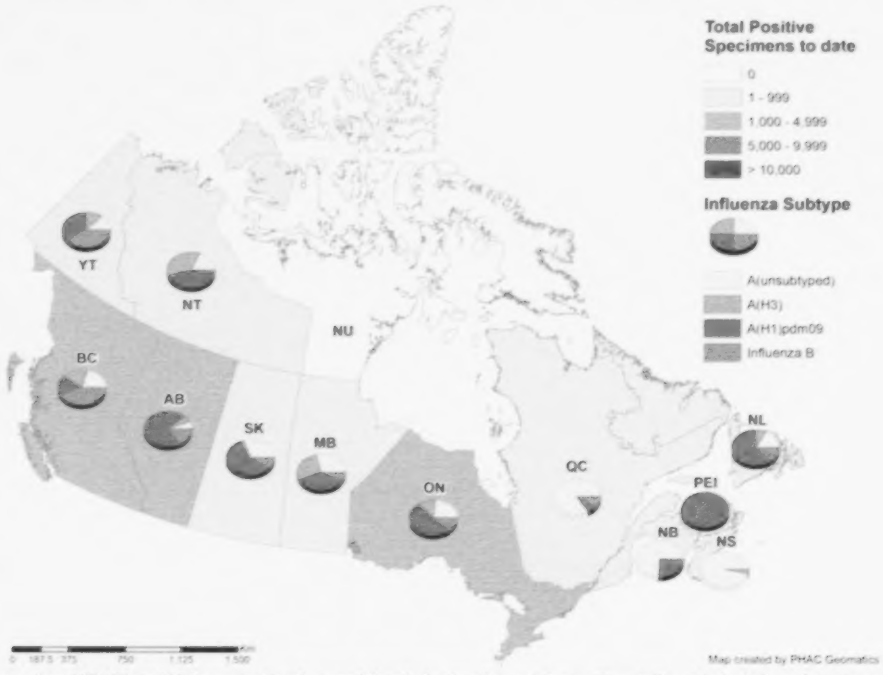
Laboratory confirmed influenza detections continue to increase. The percentage of tests positive for influenza increased from 20.6% in week 05 to 26.2% in week 06 (Figure 2). Compared to the previous five seasons, the percent positive (26.2%) reported in week 06 was above the five year average for that week and is above expected levels (range 12.9% - 21.5%) for this time of year. With the late start to the 2015-16 influenza season, these above normal levels are not unexpected and are typical of peak season levels.

Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2015-16



In week 06, there were 1,862 positive influenza tests reported. Influenza A(H1N1) was the most common subtype detected. To date, 82% of influenza detections have been influenza A and among those subtyped, the majority have been influenza A(H1N1) [82% (2819/3448)].

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province, Canada, 2015-16



Note: Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data include updates to previous weeks.

To date this season, detailed information on age and type/subtype has been received for 5,580 cases. Adults aged 20-44 years accounted for the greatest proportion of influenza cases (Table 1). Adults aged 20-44 and 45-64 years accounted for 58% of reported influenza A(H1N1) cases. Children 5-19 years and adults 20-44 years accounted for 61% of all influenza B cases reported.

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2015-16

Age groups (years)	Weekly (Feb. 7, 2016 to Feb. 13, 2016)					Cumulative (August 30, 2015 to February 13, 2016)						
	Influenza A				B	Influenza A				B	Total Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
<5	215	96	1	118	31	747	463	39	245	112	859	15.4%
5-19	137	63	1	73	62	528	324	58	146	307	835	15.0%
20-44	365	175	5	185	50	1304	834	91	379	298	1602	28.7%
45-64	320	147	12	161	28	1172	677	131	364	139	1311	23.5%
65+	198	76	15	107	20	802	302	237	263	141	943	16.9%
Unknown	10	5	2	3	0	28	17	8	3	2	30	0.5%
Total	1245	562	36	647	191	4581	2617	564	1400	999	5580	100.0%
Percentage[2]	86.7%	45.1%	2.9%	52.0%	13.3%	82.1%	57.1%	12.3%	30.6%	17.9%		

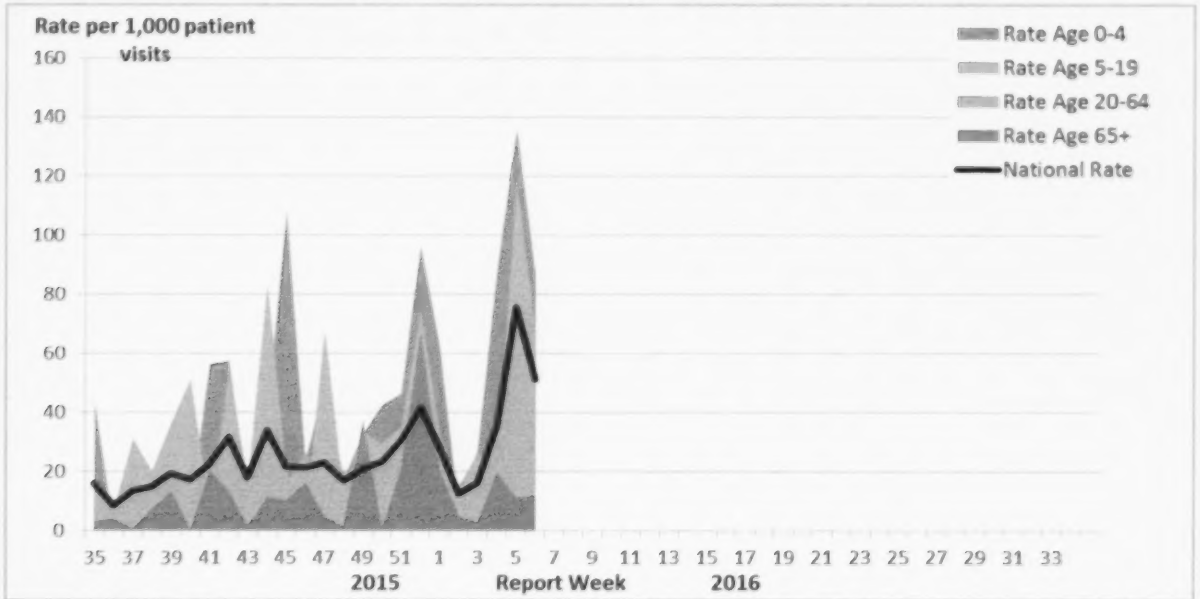
[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

For data on other respiratory virus detections see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada website.

Influenza-like Illness Consultation Rate

The national ILI consultation rate decreased from the previous week from 75.4 per 1,000 patient visits in week 05, to 50.9 per 1,000 patient visits in week 06. In week 06, the highest ILI consultation rate was found in those 0-4 years of age (86.1 per 1,000) and the lowest was found in the ≥65 years age group (11.6 per 1,000) (Figure 4).

Figure 4 – Influenza-like illness (ILI) consultation rates by age group and week, Canada, 2015-16



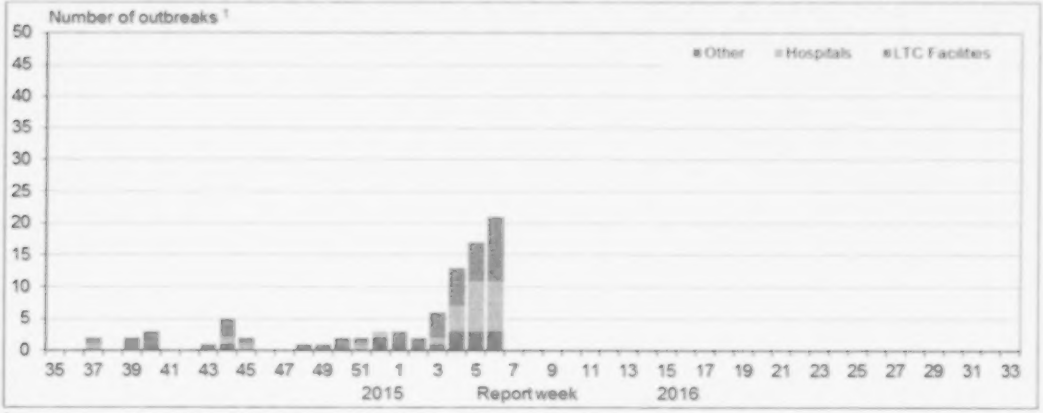
Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 06, a total of 21 new laboratory confirmed influenza outbreaks were reported: ten in long-term care facilities (LTCF), eight in hospitals and three in institutional or community settings. Of the outbreaks with known strains or subtypes: seven outbreaks were due to influenza A (two due to influenza A(H3N2), one due to influenza A(H1N1) and four were due to influenza A(UnS)), one outbreak was due to influenza B and one outbreak was due to both influenza A and B.

To date this season, 102 outbreaks have been reported. In comparison at week 06 in the 2014-15 season 1,177 outbreaks were reported and in the 2013-14 season 101 outbreaks were reported.

Figure 5 – Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2015-2016



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths

In week 06, 76 hospitalizations were reported by the the Immunization Monitoring Program Active (IMPACT) network (Figure 6). Twenty-four hospitalizations were due to influenza A(H1N1), 11 were due to influenza B and the remainder were influenza A (UnS). The highest proportion of hospitalizations was among children aged 2-4 years (29%).

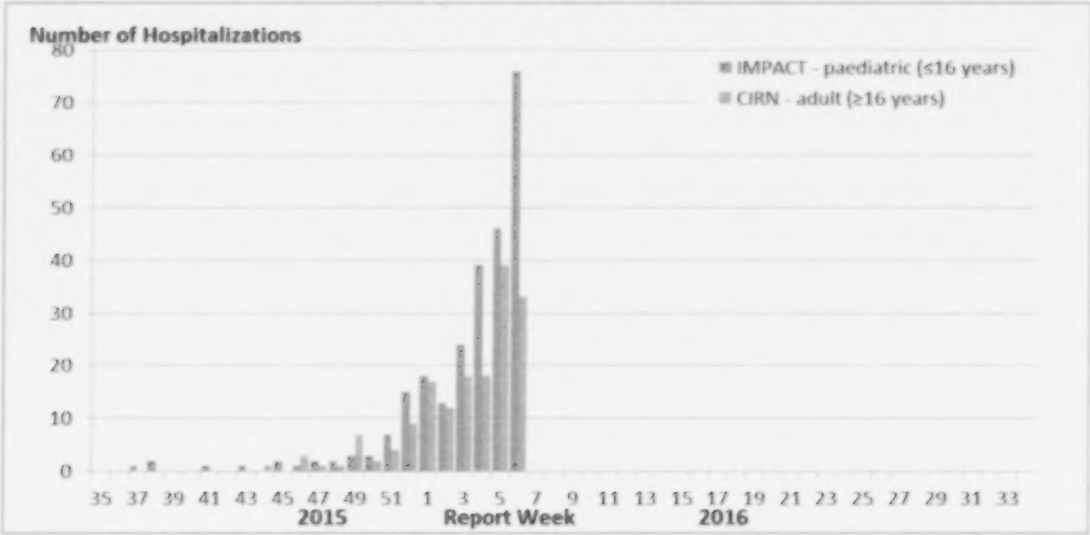
To date this season, 259 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations have been reported by the IMPACT network: 205 hospitalized cases were due to influenza A and 54 cases were due to influenza B. The highest proportion of hospitalizations was among children aged 2-4 years (33%). To date, 36 intensive care unit (ICU) admissions have been reported. The highest proportion of ICU admissions was reported in children 5-9 years (30%). Among ICU admissions for which the subtype of influenza A was reported, 86% were due to influenza A(H1N1). Among the ICU admissions, 19 (70%) were reported to have at least one comorbidity. Less than five influenza-associated deaths have been reported.

Table 2 – Cumulative numbers of peadiatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, Canada, 2015-16

Age Groups	Cumulative (30 August 2015 to 13 February 2016)					
	Influenza A				Influenza B	Influenza A and B (#(%))
	A Total	A(H1) pdm09	A(H3)	A (UnS)	B Total	
0-5m	26	10	<5	x	6	32 (12%)
6-23m	51	28	<5	x	8	59 (23%)
2-4y	70	31	<5	x	15	85 (33%)
5-9y	41	18	<5	x	18	59 (23%)
10-16y	41	18	<5	x	18	24 (9%)
Total	205	97	11	97	54	259 (100%)

X - Suppressed to prevent residual disclosure

Figure 6 – Number of hospitalized cases of influenza reported by sentinel hospital networks, by week, Canada, 2015-16, paediatric and adult hospitalizations (≤16 years of age, IMPACT; ≥16 years of age, CIRN-SOS)



*Not included in Table 2 and Figure 6 are two IMPACT cases that were due to co-infections of influenza A and B.

Adult Influenza Hospitalizations and Deaths

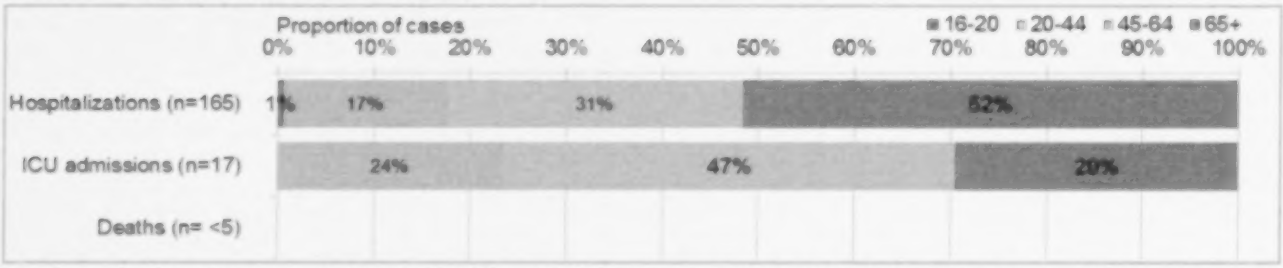
In week 06, 33 hospitalizations were reported by the Canadian Immunization Research Network Serious Outcome Surveillance (CIRN-SOS). The greatest proportion of hospitalizations in week 06 were in adults 65+ years of age (42%), followed by adults aged 45-64. The majority of hospitalizations were due to influenza A (81%).

To date this season, 166 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations have been reported by CIRN-SOS (Table 3). The majority of hospitalized cases were due to influenza A (81%) and were among adults ≥65 years of age (51%). Seventeen intensive care unit (ICU) admissions have been reported and among those, nine (88%) were due to influenza A. Less than five deaths have been reported this season.

Table 3 – Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza reported by the CIRN-SOS, Canada, 2015-16

Age groups (years)	Cumulative (1 Nov. 2015 to 13 Feb. 2016)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	1	1	0	0	0	1 (1%)
20-44	16	6	0	10	12	28 (17%)
45-64	45	12	2	31	6	51 (31%)
65+	71	12	14	45	14	85 (51%)
Unknown	1	0	0	1	0	1 (1%)
Total	134	31	16	87	32	166
%	81%	23%	12%	65%	19%	100%

Figure 7 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group (≥16 year of age), CIRN-SOS, Canada 2015-16



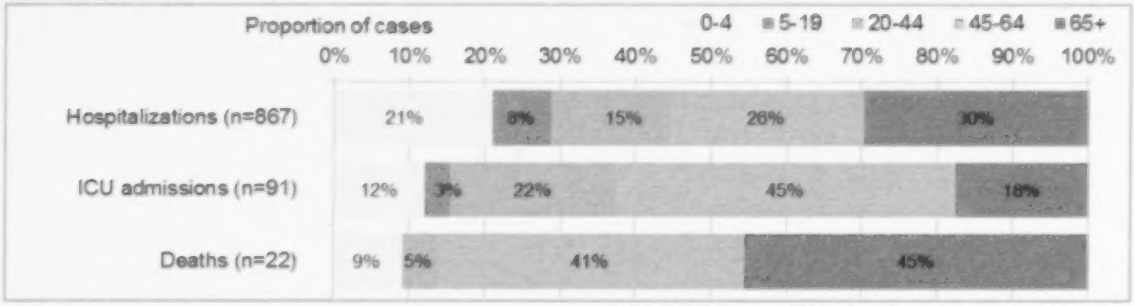
Note: The number of hospitalizations reported through CIRN-SOS and IMPACT represents a subset of all influenza-associated adult and paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Provincial/Territorial Influenza Hospitalizations and Deaths

In week 06, 125 hospitalizations have been reported from participating provinces and territories*. The majority of hospitalizations were due to influenza A (86%). The 0-4 and 45-64 age groups accounted for the largest proportion of cases reported in week 06, each representing 26% of hospitalized cases. The high proportion of hospitalizations reported in these age groups in week 06 were also reported in the sentinel hospital networks.

Since the start of the 2015-16 season, 867 laboratory-confirmed influenza-associated hospitalizations have been reported. A total of 767 hospitalizations (89%) were due to influenza A and 100 (11%) were due to influenza B. Among cases for which the subtype of influenza A was reported, 86% (433/502) were influenza A(H1N1). The highest proportion (30%) of hospitalized cases of were among those aged ≥65 years; however, the 45-64 and 0-4 age groups followed closely representing 26% and 21% of hospitalized cases respectively. Ninety-one ICU admissions have been reported.The highest proportion of ICU admissions was reported in the 45-64 age group (45%). Among ICU admissions for which the subtype of influenza A was reported, 92% were due to influenza A(H1N1). A total of 22 deaths have been reported, all due to influenza A. The majority of deaths were reported in adults 65+ of age (46%).

Figure 8 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada 2015-16



* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. Data may also include cases reported by the IMPACT and CIRN-SOS networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from ON that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2011-12 to 2015-16 on the Public Health Agency of Canada website.

Influenza Strain Characterizations

During the 2015-16 influenza season, the National Microbiology Laboratory (NML) has characterized 411 influenza viruses [118 A(H3N2), 206 A(H1N1) and 87 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assays, 23 H3N2 virus were antigenically characterized as A/Switzerland/9715293/2013-like using antiserum raised against cell-propagated A/Switzerland/9715293/2013.

Sequence analysis was done on 95 H3N2 viruses. All viruses belonged to a genetic group for which most viruses were antigenically related to A/Switzerland/9715293/2013.

A/Switzerland/9715293/2013 is the A(H3N2) component of the 2015-16 Northern Hemisphere's vaccine.

Influenza A (H1N1): 206 H1N1 viruses characterized were antigenically similar to A/California/7/2009, the A(H1N1) component of the 2015-16 influenza vaccine.

Influenza B: 36 influenza B viruses characterized were antigenically similar to the vaccine strain B/Phuket/3073/2013. 51 influenza B viruses were characterized as B/Brisbane/60/2008-like, one of the influenza B components of the 2015-16 Northern Hemisphere quadrivalent influenza vaccine.

The recommended components for the 2015-2016 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an /Switzerland/9715293/2013(H3N2)-like virus, and a B/Phuket/3073/2013 -like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus (Victoria lineage) is recommended.

The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition testing compared to the reference influenza strains recommended by WHO.

Antiviral Resistance

During the 2015-16 season, the National Microbiology Laboratory (NML) has tested 384 influenza viruses for resistance to oseltamivir and all but one virus were sensitive. All 383 viruses tested for resistance to zanamivir were sensitive. A total of 304 influenza A viruses (99.7% of those tested) were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2015-16

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	110	0	110	0	118	117 (99.2%)
A (H1N1)	196	1	195	0	187	187 (100%)
B	78	0	78	0	NA[1]	NA[1]
TOTAL	384	1	383	0	305	304

[1]NA: Not Applicable

International Influenza Reports

World Health Organization influenza update
World Health Organization FluNet
WHO Influenza at the human-animal interface
Centers for Disease Control and Prevention seasonal influenza report
European Centre for Disease Prevention and Control - epidemiological data
South Africa Influenza surveillance report
New Zealand Public Health Surveillance
Australia Influenza Report
Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2015-2016 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region†**

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region†**

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Government of Canada Influenza webpage under Weekly influenza reports.

Ce rapport est disponible dans les deux langues officielles.